

# Homework 7 – Algebra and percentages

1. Multiply out the brackets

a.  $9(a + 5)$

b.  $7(y - 8)$

c.  $4(w + 9)$

d.  $15(6 - c)$

2. Multiply out the brackets

a.  $x(x^3 + 2)$

b.  $a(ab + 3c)$

c.  $3m(8 - m)$

d.  $2y^2(w - 5y)$

3. Multiply out the brackets and simplify

a.  $3(x + 7) + 2x$

b.  $16y - 5(2y + 3)$

c.  $7(s - 2) - 13$

4. Multiply these brackets

a.  $(x + 4)(x + 7)$

b.  $(y - 9)(y - 3)$

c.  $(s + 12)(s - 2)$

d.  $(2a + 5)(a + 9)$

e.  $(3w - 8)(2w + 1)$

f.  $(4x - 3)^2$

g.  $(n - 3)(n^2 - 8n + 4)$

5. Solve these equations by first multiplying out the brackets

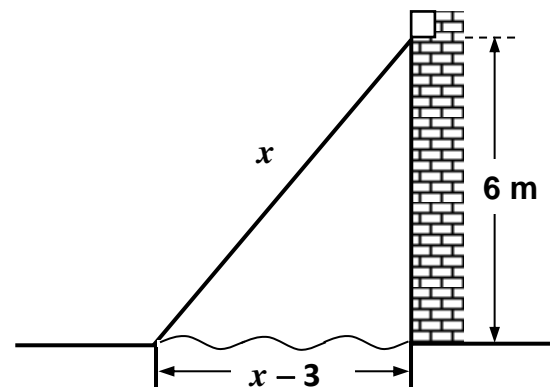
a.  $7(x - 4) = 42$

b.  $3(3a - 1) - 11 = 49$

c.  $(x + 6)(4x - 3) = (2x + 3)^2$

6. The King's Knights are attacking Baron Bracket's

Castle. The height of the window they want to reach is 6m from the ground. The width of the moat is 3m less than the length of the ladder ( $x$  m), which just reaches the window. Use Pythagoras' Theorem to find the length of the ladder and the width of the moat.



7. At 10 am there are 10000 bacteria in a culture. If they increase at a rate of 12.5% per hour, how many bacteria are there by 1 pm? **Give your answer to three significant figures.**

8. A car is now valued at £11900 having lost 15% of its value in a year. What was its value a year ago?